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ABSTRACT

This report describes a practicum which was designed to effect a significant increase in the number of students at a suburban high school who were both aware of and capable of using the online catalog and the CD-ROM reference systems, and who could also successfully communicate via electronic mail through a free network offered by the county library system. A small cadre of seniors received instruction from media specialists who certified them as Media Center Trainers. These seniors then became peer tutors in training sessions to 65 ninth graders. Practicum activities for the researcher involved scheduling sessions, setting up mail accounts, and designing the training program. Analysis of collected data demonstrated that ninth graders gained the desired skill increases, and the seniors enhanced their research skills and gained confidence and self-esteem as a result of their participation. Appendices include copies of pre- and post-training surveys, a proficiency certificate for exploratory teachers, practice assignments, a skill verification report, and photographs of the training. (Contains 17 references.) (BEW)

Students Teaching Students to Use the Electronic Information Retrieval Services in a High School Media Center

by

MaryAnn Butler-Pearson

Cluster 66

A Practicum I Report Presented to
the Ed.D. Program in Child and Youth Studies
in Partial Fulfillment of the Requirements
for the Degree of Doctor of Education

Nova Southeastern University
1995

APPROVAL PAGE

This practicum took place as described.

M. Ellen Huber

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Address

November 3, 1995

Date

This practicum was submitted by MaryAnn Butler-Pearson under the direction of the adviser listed below. It was submitted to the Ed.D. Program in Child and Youth Studies and approved in partial fulfillment of the requirements for the degree of Doctor of Education at Nova Southeastern University.

Approved:

Nov. 8, 1995

Date of Final Approval of Report

Wm. D. Anderson

William Anderson, Ph.D., Adviser

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Dr. Penelope Brown, former Media Specialist at the subject high school provided the writer with a strong foundation in technology and helped develop the writer's interest in the use of technology as a teaching and learning tool. Dr. LoisAnn Hesser, Professor of Technology at NovaSoutheastern University, provided the writer with the opportunity to learn how to use the computer to access information. Mrs. Paula Cox and Mr. Karel van Voorthuijsen, Media Specialists at the subject high school trained the Exploratory Teachers in the use of the Electronic Information Retrieval Services and provided media center access to the writer's students. The Exploratory Teachers Miss Casey Bonin, Miss Nicole Ranno, Miss Charisse Chambers, Miss Natalie Campbell, Miss Lauren Levine, Miss Kaleigh Tully and Miss Robin Weiss instructed the ninth grade students to use the electronic systems effectively. The ninth grade students shared in the writer's enthusiasm for applications of technology in the education process. Their cooperation and interest made the practicum successful. The writer would especially like to acknowledge Mr. William Pearson whose support, encouragement and patience have allowed the writer to pursue the doctoral studies of which this practicum is a part.

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Abstract

Students Teaching Students to Use the Electronic Information Retrieval Services In a High School Media Center. Butler-Pearson, MaryAnn, 1995: Practicum Report, Nova Southeastern University, Ed.D. Program In Child and Youth Studies. Electronic Information Retrieval/Electronic Mail/Peer Tutoring/Technology In Schools

This practicum was designed to effect a significant increase in the number of high school students who were both aware and capable of using the electronic card catalog and the CD-ROM reference systems. and successfully communicate by electronic mail through a free network offered by the county's library system. A small cadre of senior students received instruction from the media specialists who certified them as Media Center Trainers. These seniors were peer tutors who provided training sessions for 65 ninth grade students.

The writer assisted in establishing free electronic mail accounts for the students, designed the training program and scheduled the training sessions for the students to become skilled in the operation of the computerized equipment in the media center.

Analysis of the data revealed that this program increased the number of ninth grade students capable of gathering reference materials for school projects and enabled these students to communicate electronically with their teacher and other students. The peer tutors enhanced their research skills and demonstrated an increase in confidence and self-esteem during the training program. The media specialists received a large dividend for their investment of time in the small training cadre because the students were able to pass the training on to many other students.

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Chapter I: Introduction

Description of Community

The subject school is a senior high school in a suburban community in the southeastern United States. The population of the city is approximately 90,000 and is predominantly families with school aged children. Most of the dwellings are single family, occupant-owned homes, although there is an increasing number of rental units within the school's boundaries. Most of the students come from upper middle class families where one or both parents work and at least one works as a professional, a manager, or is self-employed. There are no students transported from areas non-adjacent to the city. Eighty-five percent of the students are classified White, 9% Hispanic, 5% Black and 1% Asian.

Writer's Work Setting

The high school, one of three public high schools which serve the community, educates approximately 2,556 students in grades 9 through 12. The staff includes a principal and 5 assistant principals. 136 classroom teachers, 2 media specialists, 5 guidance counselors, 20 secretarial personnel, 1 Resource Police Officer, and 3 security persons.

The mean class size is 35 students in both academic and elective courses. The academic program is similar to that offered in most public high schools in the state. It is not a magnet or specialty school. A large number of faculty members are relatively conservative and traditional.

Each class meets for 1 hour 6 out of every 7 days. This rotating schedule was approved by the faculty so that students may continue to study seven subjects each semester, despite budget cuts. Most of the students believe they will enter a college or university program upon graduation and pursue professional careers. Records indicate that 80%

of the school's graduates do go on to at least a 2 year community college, but no records of completion rates are maintained.

The Mission Statement for the high school is " to provide an educational environment in which students will develop in a positive way, mentally, emotionally, physically and socially by providing them with the necessary skills to achieve realistic academic and vocational goals."

Records indicate the high school has fewer incidents of crime and violence than most other schools in the district. Surveys have shown that a great majority of students feel safe at the school and most of them and their parents are satisfied with the education provided by the teachers. The teachers also feel safe at school and most are satisfied with their positions on its faculty.

The school is considerably lacking in computer technology at the classroom level. Seventy-eight percent of the teachers do not have even one computer in their classrooms for their use or the use of their students. The Media Center provides a computer workroom where 10 Macintosh 575 computers with printers are available for the teachers to use. Also in the main area of the Media Center, there are two Macintosh 575 computers with printers and modems for both teachers and students to use and access online services which include a state supported information resource and communications network for educators and their students and a regional library information network. There are also 10 computer stations (see Figure 1) accessing CD-ROMs (Compact Disk Read Only Memory). These are SIRS (Social Issues Resources Series), ProQuest and WilsonLine, periodical abstract data bases, Newsbank, a full text newspaper clipping service, Biology Digest, a full text clipping

service for biology journals, and SIRSI, the card catalog which is stored on magnetic tape and accessed through a mainframe computer at the district office. Two other Information CD-ROMs, The Oxford English Dictionary and McGraw Science and Technology are not in use because the media specialist has not yet learned their operation.

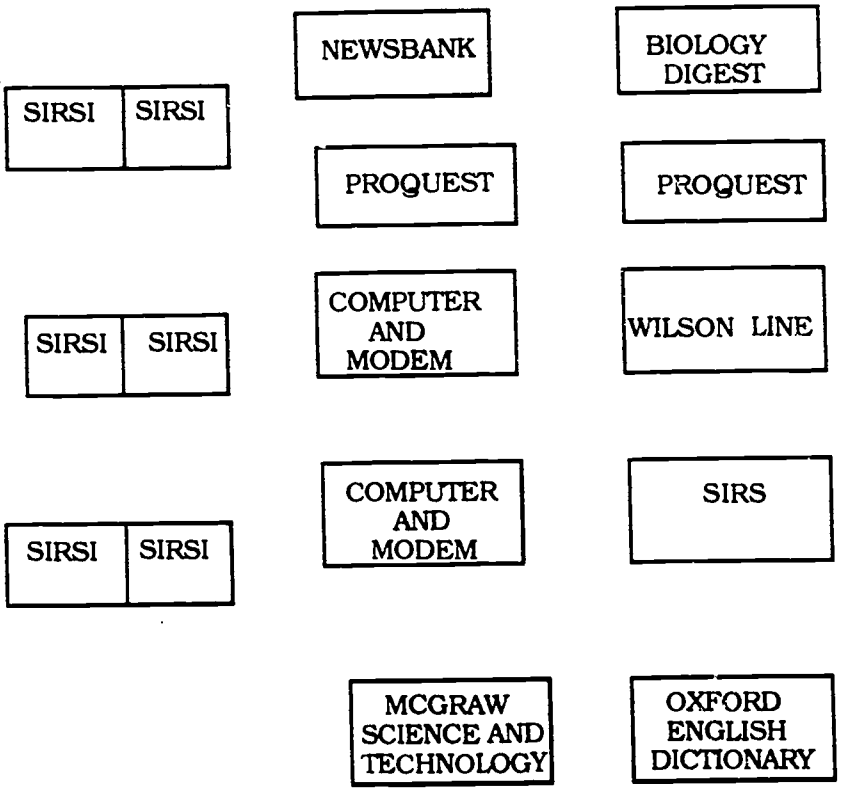

Figure 1: The relative locations of the electronic information retrieval services in the high school media center.

Writer's Role

The writer, an educator since 1969, teaches Earth Science to four classes of ninth grade students. Two of these classes consist of students grouped in an interdisciplinary house with both the writer and an English teacher. In addition to teaching science, the writer administrates and teaches a class for eleventh and twelfth grade students who are interested in teaching as a possible future career. Three years ago, the writer was given complete freedom in developing the Exploratory Teaching class at the school and has designed it to allow students the opportunity to experience teaching as assistants to teachers in the subject school as well as in local elementary and middle schools. This was done to allow the Exploratory Teachers to interact with children on the levels or in the subject area of their own interest.

The writer's science classroom reflects a strong belief in the importance of communication, collaboration and general interaction among students in a cooperative learning setting. There is good discipline in the classroom because the students respect the climate that exists there. Many learning opportunities are presented in the form of group projects and research beyond the textbook. The writer encourages students to relate knowledge attained in their Earth Science classroom to situations and events occurring in the world outside of school.

The writer is a charter member of the state's League of Teachers. This group, consisting of approximately 75 teachers selected from across the state, was instituted to actively assist in the restructuring process that is occurring in schools throughout the state. Members of the League receive valuable training which is shared with teachers in schools

in all areas of the state in "Academies of Excellence in Teaching" held during the school year as well as in the summer.

The administration at the subject high school has often regarded the writer as an innovator, unafraid to try new methods or institute new programs. The writer has received a vast amount of training in cooperative learning, learning styles, facilitative leadership, and collegial coaching at the district level and through membership in the state's League of Teachers. Using the skills learned at these trainings, the writer has conducted many workshops for teachers at the subject school, the district and the state. The writer was 1993 Teacher of the Year for the school district, one of the seven largest in the Nation.

To add to these experiences, the writer has served on district and state textbook selection committees and curriculum writing teams.

Chapter II: Study of the Problem

Problem Statement

The problem solved in this practicum was that students did not know how to use the electronic data retrieval services located in the school media center to select references for their reports and other assignments nor did they have and use electronic communications accounts.

Students entering the media center in class groups or individually should have the skills necessary to perform research in an efficient manner. They should be able to access, select and retrieve information through the electronic equipment available and locate books and microfiche kept at the school. In addition, the students should know how to use modem communications to access information sources outside the school and send electronic mail (E-mail) to one another as well as their instructors.

Problem Description

The paper card catalog was no longer available in the school's media center. It had been replaced with SIRSI, a computer accessed version. Several other information retrieval services were being provided electronically on CD-ROM. The former, traditional methods of locating references and research materials, that were familiar to students and faculty alike, were no longer available in the school's media center. There was no formal training for the school's faculty or students in the use of the electronic information retrieval services. The media center was staffed by two media specialists, one working mainly with print materials and the other with audiovisual equipment and materials. There were two media secretaries who facilitated the check-out and check-in of books,

periodicals and microfiche for the students and teachers as well as equipment for the teachers. The media staff did not have the time nor the personnel to train classes of 35 to 40 students on the computers supplying the research information. Several teachers at the school had little or no experience with computers and were somewhat wary of them, and so, were unable to assist their students in the modern research techniques.

Students often roamed through the stacks hoping to find something pertinent to their topic. Most of those unable to get what they required lost attention and became discipline problems. The results were students who were unable to perform research adequately and teachers who were frustrated because their students did not use library research time efficiently.

Problem Documentation

There was a problem with the ability of students to use the electronic information retrieval services at the subject school's library. This problem was evidenced by the following:

Observations made by the writer during 10 random visits to the school media center showed that students in the media center were not effectively using the computerized services. On 9 of the 10 visits, the writer saw fewer than 10 of approximately 75 students, in the library on each occasion, working on the computers. The others were wandering through the library stacks, sitting at tables reading or asking the staff for assistance. On one of the visits, the writer found all 10 of the computers in use and lines of students waiting to use the equipment. The surprised writer questioned these students and learned that they were part of a debate class. Their debate teacher had taught them to use the electronic

retrieval systems to access the most current information available for their debate topics. At no time did the writer observe any students using the communications programs accessed by computer modem.

Pre-implementation surveys were distributed among 45 students in varying grade levels found working in the media center (see Appendix A). These revealed that 28 out of the 45 had little or no knowledge of the electronic information retrieval services, 12 could use the electronic card catalog and 40 were unable to use any of the other services.

Informal questioning of 65 of the writer's current ninth grade science students revealed that 42 of them were aware of the available electronic information retrieval services in the school media center. A pre-implementation survey showed that 23 out of these 65 students were able to use the electronic card catalog because they had used one in the public library. Twenty-two of the 65 students had previously used the other CD-ROM based services although none of them knew of what a Boolean search consisted or how to perform one. Three students had previously sent Email through a pay-for-use communications network. None of the 65 students were aware of the free access to modem communication available to them through the County Library System or the state supported communications network available to educators and their students. Of the 65 students questioned, 11 were members of the debate program at the school and were taught to use some of the electronic equipment by the knowledgeable debate teacher. Some of the students discovered their existence during other class visits to the media center.

The media specialists were interviewed and revealed that very few students, especially the underclassmen, had the skills necessary to

retrieve information through the electronic means available and almost no one, neither staff nor student, took advantage of the communication services available through use of the computer and modem.

Causative Analysis

The movement into the computer age had come very quickly and filled all areas of today's culture. It was only a short matter of time before automation and computerized services would enter the traditional library and transform it into a modern media center. This rapid transformation was compounded by the inability of the previous generations to pass on the knowledge of the new skills necessary to the younger generations. Parents who had never touched a computer often took their children to an automated community library and were nearly helpless in its navigation. This inability to use the computerized services carried over into the school setting, where the important process of research was impaired. Electronic information retrieval services appeared first in the district's high schools. Many middle schools did not have these services and the students did not receive instruction in their use. Consequently, many students who entered the ninth grade at the subject high school had no previous experiences with the technology.

To many at the subject school, the electronic information retrieval services arrived instantaneously, without warning and without proper training and preparation of the staff and students. With all of the other responsibilities they had, it was impossible for the media specialists to train the large staff and tremendous number of students to use the electronic services. Due to the large size of the school, it was not unusual for two classes of 30 to 40 students each to be using the media center every period of the day. Walk-in students added to this number.

Interviews with both of the media specialists indicated frustration from their inability to devote the necessary time to train the students who came to the media center. They were already overwhelmed with their normal workload at a school of this size. All of their former duties still had to be accomplished and budget cuts eliminated the possibility of hiring additional personnel.

New computerized data bases arrived at the school and the media specialists had not yet learned their operation. These materials were not used by anyone.

Relationship of the Problem to the Literature

A literature search yielded several informative articles related to both problem and solution. The writer found many references to available CD-ROM databases and hardware available for library purchase. Journals written for professional librarians and media specialists are filled with advertisements, reviews and descriptions of the electronic innovations for library use (Griffiths & Kertis, 1994; Conway, 1994; Arnold, 1991) as well as a plan for the design.of a media center for the 21st Century (Carter, 1994). Business Week mentions a CD-ROM package of historic documents for reference and preservation (1994). Conway also presents the case for digital technology as an excellent means of preserving historical documents and research collections.

Debates concerning the total conversion from paper and microfilm into digitized format were found (Conway 1994; Ensor, 1994). Gale Researcher, Beth Dempsey states that the speed and efficiency with which electronic media facilities conduct research will enhance the importance of reference material (as cited in Ensor). Childers (1994), cites the dramatic increase in requests for research assistance as a

problem for librarians in general not only at the subject school, as observed by the writer. He reports that this increases in requests could jeopardize the future of reference assistance unless librarians received help in meeting the demands . Ensor predicts that the reference librarian of the future may be found wherever there is a computer and a networked phone line.

In some schools, classrooms have become the doors to travel, exchange of cultures, ideas and friendships through the Internet. Access to the information highway allows students from all parts of the world to collaborate on projects and learn from and about each other. The hidden curriculum here is that of global citizen. Communication is a bridge from culture to culture and has the potential of fostering greater understanding and peace among nations (Butler-Pearson, 1995).

Lohr (1994) relates a tale of two schools. One is a suburban Chicago school with over 300 computers for student use in school or at home. The other is a poor school on an Indian Reservation in Montana, where the librarian applied for and received a small grant to install a phone line and a personal computer with modem. In both cases, the situation of the students was improved because access to electronic information was achieved, but on different levels and in different proportions. Schools may be at different levels of use, but computer communications is sweeping the nation and will continue to do so at exponential rates. Lohr's main concern is that unless equal access to technology is insured, the gap between rich and poor will continue to widen. The Federal Government is becoming involved, pushing for legislation that would require phone and cable companies to provide inexpensive hookups and services to schools. Vice President Gore has

challenged the communications industry to connect every classroom in the United States to the National Information Infrastructure by the year 2000 (Cohen, 1995).

The February, 1995, issue of Curriculum Administrator is devoted entirely to the integration of technology with the school curricula. Described within are various online services and resources available to educators. These services help to create a worldwide learning network to reinforce collaborative learning among students around the world ("Online With," 1995). School librarians must truly become media specialist because they will frequently be asked to assist the classroom teachers by suggesting CD-ROM's to enhance curriculum. They will be expected to provide enrichment through instructional sessions involving the use of multimedia ("Power Your Library, 1995)

Miller and Shontz, professors of Library and Information Studies at the University of North Carolina, studied technology applications in high school library media centers throughout the United States (1994). They emphasize the importance of teaching library media skills if students are to use microcomputers and other media technology effectively. Miller and Shontz also express great concern over the increased workload shouldered by media specialists who must now learn, manage and teach the new technologies, in addition to their traditional duties.

William Acoup, Reference Librarian at a local city library is most enthusiastic about this writer's project. He explained that the changes in accessing information have been so rapid in the last two to three years, that many patrons are confused and unable to use library services. His opinion is that every secondary school should have training provided for

the students to learn how to use the media center. Acoup contends that the skills taught in schools would carry over into the public library use. These skills would serve the students for a lifetime of research and learning as well as literary pleasure (personal communication, December 28, 1994) . Eric Flower, editor-in-chief of Computers in Libraries, stresses the same opinion. He describes the transformation of the modern library into a center where information is not only obtained through in house computers, but also through networked sources from many sites. He emphasizes that training patrons to use the media equipment is the only solution to effective use of the electronic library of today and tomorrow (1992).

Irene Sever, Director of Library Studies at Haifa University, Israel, has compared electronic information retrieval to the anthropological phenomenon of culture shock for many learners. Sever suggests that computer and non print literacy involves an unfamiliar language and the use of strange equipment with incredible capabilities. Even following the format in which the information is presented is different from the traditional scanning of a page on a flat, horizontal surface (1994).

Patrons' unfamiliarity with and apprehension for the use of electronic information retrieval services seemed to be a universal problem for media specialists. The school was an ideal location to begin to rectify this form of illiteracy. A problem encountered was finding personnel with both the time and the skills to remediate the situation.

The writer discovered that electronic data retrieval both influences and is affected by several topical areas. The writer learned not only about technology and library science but also their impact on sociological issues, education and the knowledge explosion.

Chapter III: Anticipated Outcomes and Evaluation Instruments

Goals and Expectations

The goal of the practicum was to bring about a significant increase in the effective use of the electronic information retrieval services available at the subject high school and to put students online where they may further access information and communicate with others.

Expected Outcomes

The following outcomes were projected for this practicum:

1. At the end of the implementation period, observation of and surveys given to 65 ninth grade students will reflect an increase from 42 students in the pre-assessment to 60 who report awareness of the electronic information retrieval services in the school's media center.
2. At the end of the implementation period, completed assignment sheets for topics given to 65 ninth grade students will show an increase from 23 students in the pre-assessment to 55 who can successfully use the electronic card catalog.
3. At the end of the implementation period, completed assignment sheets for topics given to 65 ninth grade students will show an increase from 24 students in the pre-assessment to 55 who can successfully use the electronic information retrieval services other than the card catalog.
4. At the end of the implementation period, 35 out of the 65 students will have membership in and have accessed a communications network and sent at least one E-mail message.

Measurement of Outcomes

Each of the ninth grade students participating in the implementation of this practicum was part of a cooperative learning group involved in researching and presenting topics related to the curriculum studied in the writer's science class. The projected outcomes of this practicum were measured by a report on the progress of the students as each one mastered the skills, the administration of a written post-implementation survey (Appendix B), continued observation of these students as they performed research in the school's media center and their submission of assignments that show successful use of the electronic information retrieval services. The post-implementation survey was used to compare its results with those of the pre-implementation survey. The report of progress was completed by those who were providing the instruction to each student. They were the best individuals to assess progress. The writer observed the students working on assignments in the media center to determine if the students were indeed using their newly acquired skills. The submission of a computer generated reference list was a performance evaluation. Each student was given the opportunity to enroll in one of the free online services and instructed to send the writer, their teacher, a message using E-mail. Another performance evaluation was achieved as the writer received E-mail messages from the students.

Chapter IV: Solution Strategy

Statement of Problem

The problem solved in this practicum was that students did not know how to use the electronic data retrieval services in the school media center to select references for their reports and other assignments nor did they have and use electronic communications accounts.

Discussion and Evaluation of Solutions

The success of peer teaching and coaching has been chronicled in many sources. Outstanding examples, such as the program designed by high school senior Felipe Aguel, have been shown to increase the graduation rate of students. The student, Aguel, emphasizes that education is enhanced when one-on-one tutoring is provided in addition to instruction by the teacher. He also recognizes the self esteem and satisfaction received by the student tutors who have helped their classmates (1993).

In Wichita, Kansas, the H.O.P.E. (Helping Others through Peer Education) program has been successful in providing AIDS education to classmates, younger students and friends (Bregman, 1994). Mary Faber writes that peer tutoring has increased the skills of both tutors and those tutored. She also points out that attendance and grades show improvement and attitude towards school becomes more positive when students help students (1991). Larry D. Dorrell emphasizes the positive effect peer coaching has on the self-esteem of the student tutors (1992). These positive ramifications of the writer's intended tutorial program were not considered before reviewing the literature. The writer also had

not previously considered the effect this training would carry over to the community library services.

Description of Selected Solutions

The writer created a cadre of trained personnel who taught the skills needed to perform searches, retrieve information from electronically stored sources and communicate through E-mail. This cadre consisted of students from Exploratory Teaching class at the subject school. One of the media specialists conducted training for 7 of these students in the skills required to access the electronic card catalog, the CD-ROM information services and modem communications. The Exploratory Teaching students then instructed other students (see Figure 2) who rotated among the computer stations. This original idea for solving the problem was supported by articles found during the literature search.

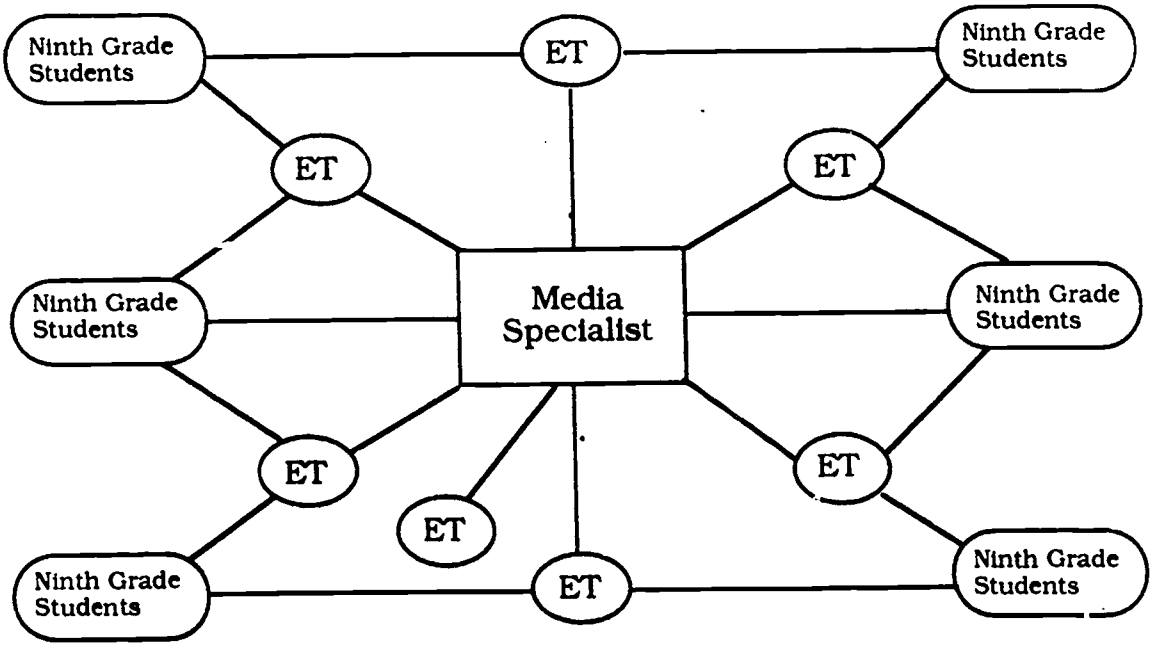

Figure 2. One Media Specialist trains seven Exploratory Teachers in the use of the electronic information retrieval services.Six of the Exploratory Teachers each instruct one cooperative learning group of four students at a time. The seventh roams as an assistant.

Training sessions were established in the media center for seven of the eleventh and twelfth grade students in the Exploratory Teaching class. They learned the concept of the Boolean search and its implementation in the research process. The Exploratory Teaching students demonstrated their competencies on the equipment before being allowed to train other students. Those in the Exploratory Teaching cadre who demonstrated mastery level skills in the use of electronic data retrieval services received a certificate sanctioning them as Media Center Trainers (Appendix C) and they began to teach the writer's ninth grade students.

The ninth grade students were given practice assignments to help them learn how to use the electronic information retrieval services (Appendix D). When they had learned each skill necessary to complete the assignments, the Exploratory Teacher verified this accomplishment on a record sheet (Appendix E).

Report of Action Taken

The writer surveyed a group of ninth grade students in two Honors Earth Science classes to determine their familiarity with the electronic information retrieval and electronic mail services in the high school's media center. The survey addressed both their awareness of the services available and their possible ability to use the equipment. The survey revealed that there was a need for ninth grade students to be taught the skills necessary to use the electronic information and communication services. The writer discussed the situation with the two media specialists and arranged with them a plan to train a group of students. Because of the time necessary to provide the needed training to so many students, it was decided that the media specialists would work only with

a very small group of older students who would then instruct the younger high school students. The writer selected seven students from the Exploratory Teaching class to act as this small cadre.

Once the need for the program was established, the media specialists were consulted to ascertain their assistance. The two ninth grade classes to receive the training were selected. The writer contacted the county library system to obtain applications for communication accounts that would be free of charge for all students who received one. The applications included a parent signature request to verify that the students had their parent's permission to get online and possibly the Internet. These applications were distributed to the students, collected over a week's time and sent to the county library for processing. Within two weeks, all students who requested an online account were registered for one. The account would be used at school but could be used from any computer and modem and so would benefit the entire family. The network provided by the county library system not only permitted the students to send E-mail, but also do research online through the county public library.

The writer met with the media specialists at the high school and designed a training schedule for the Exploratory Teachers. Over a period of two weeks, the seven Exploratory Teachers went to the media center during one class period four times each week and were instructed in the operation of the electronic information services. After each skill was mastered, documentation was recorded by the media specialist who provided the instruction. At the end of the training, each of the seven Exploratory Teachers received a certificate declaring them Certified Media Center Trainers (see Appendix C).

Next, the writer established a training schedule for the 65 ninth grade students who were to be trained. It was decided that these students would be taught one to two skills per session and would rotate among the stations. One Exploratory Teacher was appointed to each station and would instruct one cooperative group of four ninth graders at a time. Because the school's media center was open to all students at the scheduled training time, the writer limited the number of students involved in the program to three Exploratory Teachers and 12 ninth grade students each training day. This scheduling prevented the writer's students from monopolizing the media center facilities. The 65 ninth grade students were scheduled for training days in the media center during a four week period. The students who were not in the groups being trained on a particular day remained in the classroom and continued to do the regularly scheduled work. The writer prepared lessons that could be staggered to meet the needs of the training schedule.

Each cooperative learning group of ninth graders was assigned a topic to research that was related to the Earth Science curriculum normally introduced by the writer during that particular quarter of the school year. The topic of natural disasters provided the individual areas for study. These included floods, drought, storms, earthquakes, volcanoes, mass movements, tornadoes, blizzards, and forest fires. Each cooperative group in both classes was randomly assigned one area from those mentioned.

In the past, students did their research using traditional methods. For the current students, the research was done using technological advances in research capabilities. The ninth grade students were instructed in the media skills and the Exploratory Teachers documented

each student as each skill was acquired. The ninth grade students were then given one week to gather information on their topics and to prepare a presentation of their topics to the class. The writer observed the ninth grade students during their visits to the media center. One of the requirements for the project was that after the electronic search, each member of the cooperative learning team was to give the writer hardcopy of the references gleaned from a different system in the media center.

The ninth grade students were encouraged to communicate with their teammates through the electronic mail. To show competence in this skill, the writer required each student to send an E-mail message to the writer's electronic mail account within a two-week time span.

Finally, the ninth grade students presented their findings to the class in an exhibition which in some cases included skits, home-made videos and role playing. Their grades were based, not only on the quality of their exhibitions, but also on the depth and quality of their references. References were submitted in the form of hardcopy from electronic information retrieval services.

The writer encountered a few stumbling blocks during the implementation of the practicum. The electronic information retrieval services are CD-ROM based. Two of the programs were not working for a while and so the writer had to rearrange the training schedule to avoid these systems until they could be repaired. In addition, a pep rally was scheduled during a day of the ninth grade training sessions and the schedule had to be changed to accommodate shorter class periods. Ninth grade class pictures were also scheduled during one of the training sessions and that day of instruction had to be rescheduled.

Originally, the writer planned to have 20 members in the instructional cadre, but conflicts in class schedules for the Exploratory Teachers permitted only seven students to be available during the class period that was designated for the training. After the implementation was completed, the writer determined that seven tutors was actually a more desirable number than the proposed 20. Fewer Exploratory Teachers meant that those providing the training would see their students more frequently. This allowed the presence of a more familiar atmosphere and the development of a more personal relationship among students and their tutors. The Exploratory Teachers had more time to work on each of the information systems, which resulted in a greater knowledge of and expertise in the programs. The lower number of trainers reduced the overall number of students in the already overcrowded media center of the large high school.

Chapter V: Results

Results

The problem in the writer's work area was that students did not know how to use the electronic information retrieval systems in the high school's media center nor did they know how to send E-mail. The media specialists at the school were unable to provide adequate training to a large number of students and teachers due to time constraints and their other responsibilities. A cadre of competent trainers who had the opportunity to train students had to be located. The writer studied peer coaching and determined that this would be a viable solution. In addition to science classes, the writer teaches a class for students who are investigating the teaching profession as a future career. A small number of these students was trained in depth by one of the media specialists. These Exploratory Teachers were then used to instruct the ninth grade students in the successful use of the available technology for gathering information and communicating online.

The following outcomes were projected for this practicum:

1. At the end of the implementation period, observation of and surveys given to 65 ninth grade students will reflect an increase from 42 students in the pre-assessment to 60 who report awareness of the electronic information retrieval services in the school's media center.

This outcome was met.

Sixty-five out of 65 ninth grade students were aware of the presence of the electronic information retrieval services in the high school media center after the training period (see Table 1). Because each student in the two classes was brought to the media center for training,

awareness of the available sources was afforded to all of them. There were no absent students on any of the initial training days.

2. At the end of the implementation period, completed assignment sheets for topics given to 65 ninth grade students will show an increase from 23 students in the pre-assessment to 55 who can successfully use the electronic card catalog.

This outcome was met.

Sixty-one out of 65 ninth grade students in the cooperative learning groups completed the SIRSI electronic card catalog portion of the training exercises (see Table 1). Their assignment sheets were completed and their activities were validated by the Exploratory Teachers who trained them. There were no absentees on any of the days of this training.

3. At the end of the implementation period, completed assignment sheets for topics given to 65 ninth grade students will show an increase from 24 students in the pre-assessment to 55 who can successfully use the electronic information retrieval services other than the card catalog.

This outcome was met.

Sixty-one out of 65 ninth grade students in the cooperative learning groups completed the portion of the assignment sheets pertaining to the use of electronic information retrieval services, other than the card catalog, by the end of the training period (see Table 1). They gave the completed assignment sheets to the writer. Three students did not complete the assignment sheets. One student lost the assignment sheet.

4. At the end of the implementation period, 35 out of the 65 students will have membership in and have accessed a communications network and sent at least one E-mail message.

This outcome was met,

By the end of the training period, 59 out of 65 ninth grade students had documented membership in a communications network. The writer received E-mail messages from 51 of these students (see Table 1).

Table 1

Summary of success achieved by 65 ninth grade students who received instruction in electronic information retrieval

Outcome	Pre-implementation	Projected Results	Actual Results
Awareness	42	60	65
Electronic Card Catalog	23	55	61
CD-ROMs	22	55	61
Free Email Service membership	0	35	59
Sent Email	3	35	51

Discussion

Among the ninth grade students, the writer discovered a great interest in learning to use the technology provided by the school's media center. Their enthusiasm was an important factor in assuring the success of this practicum. Many of the students went far beyond the writer's expectations. In addition to communicating with the writer using E-mail, the ninth grade students began to form a network among themselves. They have also inquired about establishing communication with students in high schools in other parts of the state. The writer is

currently researching this possibility and has made E-mail contact with a ninth grade honors Earth Science teacher in the central section of the state. The two teachers are planning to allow their students to communicate with one another using their free E-mail accounts. This success implies a change in the research techniques of a group of students that may affect their present and future education in that many avenues which were once unknown are now open to them. Entry into the world of electronic communication will provide them with a vast number of varied opportunities to network with students from far away places, thereby increasing the scope of their cooperative learning groups. For many students, this practicum provided them with the first practical application of computer skills. The awareness of the availability of computer access in the high school's media center was important to students who did not have computers in their homes. Their opportunities in the realm of research were enhanced through the knowledge that the media center could provide them with the electronic equipment necessary to access information.

The writer found it interesting to see the effect electronic research had on the presentations when compared to those of students in previous years. The present students had more current examples and information. Their study of the topics was broader in scope than in the past. The writer also saw a pride in the students which reflected their feelings of accomplishment, not only for the academic knowledge they gained, but also for the new skills they possessed. Many were anxious to use those skills again for another assignment.

The Exploratory Teachers benefited greatly from their part in training program. The enhancement of their own research skill-

of valuable assistance to them in their studies. They also exhibited an increase in self-esteem as they worked with the ninth grade students. They were regarded as experts in the field of computer research. The Exploratory Teachers expressed joy at the success they experienced from teaching others a new, practical skill.

The media specialists were especially appreciative to the Exploratory Teachers for taking on such an intensive training program. They recognized that after they trained the Exploratory Teachers, they had a cadre of knowledgeable people who disseminated their expertise to other students on campus who would in turn, explain the research techniques to other students in their classes.

Other teachers from the school observed the training sessions and inquired about the possibility of providing their students with the instruction. This unanticipated outcome could spread the knowledge of and skills required for electronic research much more rapidly than originally expected.

The high school where the practicum was implemented received funding to install only seven new telephone lines dedicated to computer modem access. Because of this practicum, the writer's classroom was selected to receive one of these roads to the Information Highway.

In summary, through the implementation of this practicum, the writer recognized the positive impact that peer coaching has on both the tutor and the tutored. The writer also identified peer coaching as a successful technique for alleviating some of the demands made on school instructional personnel. It is the opinion of the writer that the success of this practicum was based, in part, on the practicality of the knowledge and skills that the students were taught. The students could see the

application of their learning and so were motivated to learn well. The infusion of technology into their science class stirred a greater than normal interest in the topic studied by the ninth graders. The interest generated among the writer's colleagues demonstrated the potential influence this practicum could have throughout the writer's school. One teacher even attended the training sessions given for the ninth grade students so that she could acquire the skills required to successfully operate the electronic information retrieval services. Her intent is to teach some of her students and have them teach their peers. Three teachers have requested that the Exploratory Teachers currently working with their classes receive training and then instruct their ninth grade students. This web effect is expected to permanently impact the type and quality of research that takes place in the school media center.

Recommendations

1. Students in programs such as Exploratory Teaching could develop other skills and learning techniques that they could share with their peers. The literature reviewed has documented that peer coaching is effective as a technique for enhancing student learning.

2. It was not necessary to require the students to be trained on all of the available electronic information retrieval services. After the electronic card catalog and two other services were learned, the students were able to transfer this knowledge to the other electronic services.

3. The program could be extended throughout the school year to include every ninth grade science class. This would ensure that all students would have the opportunity to develop the technology skills early in their high school career and so would benefit from them throughout their continued education.

Dissemination

The Exploratory Teaching program is present in every high school in the writer's district. It is the writer's intent to disseminate this practicum through the Teacher Education Alliance which facilitates the program at the district level. The writer believes this to be a worthwhile project for the Exploratory Teachers at other high schools and might be incorporated into the district's plan for the Exploratory Teaching program. Each year the school district in which the writer teaches has a large exhibition at the county convention center. At this "Schools of Excellence" exhibition, each school from the district has the opportunity to exhibit or present a program or practice that makes a positive impact at that school. The writer will submit an application to present this practicum at the next conference. The writer will also consider submitting an article based on this practicum for publication in a journal that focuses on technology in the schools. Publication in a resource such as ERIC will also be considered.

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Appendix A

Sample Electronic Information Retrieval Services

Pre-implementation Survey

Electronic Information Retrieval System Survey

STUDENTS: PLEASE TAKE A MOMENT TO ANSWER THE FOLLOWING QUESTIONS ABOUT YOUR SKILL AT OBTAINING INFORMATION THROUGH OUR SCHOOL'S ELECTRONIC INFORMATION RETRIEVAL SERVICES:

My Grade level is 9 10 11 12

1. I **am aware** that our card catalog is accessible by a computer in our school media center.

   TRUE FALSE

2. I **am aware** that other directories and research sources are on CD-ROM and are accessible by computer in our school media center.

   TRUE FALSE

3. I **am aware** that I can send electronic mail free of charge through systems available in the school media center.

   TRUE FALSE

If you answered **TRUE to any of the above questions**, please answer the following:

4. I **KNOW HOW** to use the electronic card catalog.

   TRUE FALSE

5. I **KNOW HOW** to use the other reference computers.

   TRUE FALSE

6. I **KNOW HOW** to send electronic mail.

   TRUE FALSE

Thank you for your time.

Appendix B

Sample Electronic Information Retrieval Services

Post-Implementation Survey

Electronic Information Retrieval System Survey

STUDENTS: PLEASE TAKE A MOMENT TO ANSWER THE FOLLOWING QUESTIONS ABOUT YOUR SKILL AT OBTAINING INFORMATION THROUGH OUR SCHOOL'S ELECTRONIC INFORMATION RETRIEVAL SERVICES:

My Grade level is 9 10 11 12

1. I **am aware** that our card catalog is accessible by a computer in our school media center.

   TRUE FALSE

2. I **am aware** that other directories and research sources are on CD-ROM and are accessible by computer in our school media center.

   TRUE FALSE

3. I **am aware** that I can send electronic mail free of charge through systems available in the school media center.

   TRUE FALSE

If you answered **TRUE to any of the above questions**, please answer the following:

4. I **KNOW HOW** to use the electronic card catalog.

   TRUE FALSE

5. I **KNOW HOW** to use the other reference computers.

   TRUE FALSE

6. I **KNOW HOW** to send electronic mail.

   TRUE FALSE

7. The skills I already had definitely improved because of this training

   TRUE FALSE

COMMENTS: _____

Thank you for your time.

Appendix C

Sample Proficiency Certificate For Exploratory Teachers

Name _____ Completion Date _____

The above named Exploratory Teacher has achieved proficiency in the following electronic information retrieval systems:

SYSTEM		DATE ACHIEVED
_____	SIRSI	_____
_____	ProQuest	_____
_____	SIRS	_____
_____	WilsonLine	_____
_____	Newsbank	_____
_____	Biology Digest	_____
_____	Communications	_____

Certified by:

_____

(Media Specialist)

Appendix D

Sample Practice Assignment Sheet For Ninth Grade Students

NAME _____ PER _____

TOPIC RESEARCHED: _____

BOOK:
SEARCH WORDS USED: _____

TITLE _____

AUTHOR (S) _____

COPYRIGHT DATE _____ WHERE? _____

DOES THE BOOK HAVE A TABLE OF CONTENTS? YES NO
DOES THE BOOK HAVE AN INDEX? YES NO
COPY THE 3RD LINE FOUND ON PAGE 15:

_____

_____

MAGAZINE / PERIODICAL:
SEARCH WORDS USED: _____
1.
TITLE OF PERIODICAL _____
TITLE OF ARTICLE _____
AUTHOR OF ARTICLE _____
PAGES ON WHICH THE ARTICLE IS FOUND _____.
SECOND SUBJECTS _____
2.
TITLE OF PERIODICAL _____
TITLE OF ARTICLE _____
AUTHOR OF ARTICLE _____
PAGES ON WHICH THE ARTICLE IS FOUND _____
SECOND SUBJECTS _____

Appendix E

Sample Report Submitted By Exploratory Teachers

Verifying the Skills of the Ninth Graders

COOPERATIVE GROUP # _____

Student Name _____

[redacted] Verifier's Initials _____

SIRSI		
ProQuest		
WilsonLine		
NewsBank		
Biology digest		
SIRS		
E-mail Account		
E-Mail Message		

Appendix F

Photographs of Exploratory Teachers Training

Ninth Grade Students